IN THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

Listing of Claims:

1(Previously Presented). A multicarrier signal receiver for receiving a serial signal sequence of modulated subcarriers carrying information for input pilot and data symbols, comprising:

a subcarrier-to-symbol converter for converting said serial signal sequence into received pilot and data symbols representative of said input pilot and data symbols; ~~and~~

an inverse Fourier transformer for selecting said received pilot symbols from said received pilot and data symbols and then inverse Fourier transforming said received pilot symbols into received pilot multicarrier blocks

a pilot multicarrier generator for generating a computed pilot multicarrier block having complex conjugates of system pilot symbols corresponding to said input pilot symbols;

a correlator for correlating said received pilot multicarrier blocks with said computed pilot multicarrier block for providing a correlation function;

a frequency offset estimator using said correlation function for providing a frequency synchronization adjustment; and

a signal source for providing a reference signal having a frequency responsive to said frequency synchronization adjustment; wherein:

the subcarrier-to-symbol converter uses said reference signal for frequency synchronizing to said serial signal sequence and providing a frequency synchronized serial signal sequence, said received pilot and data symbols derived from said frequency synchronized serial signal sequence.

2(Original). The receiver of claim 1, wherein:

said modulated subcarriers are an orthogonal frequency division multiplex (OFDM) signal formed by inverse Fourier transforming said input pilot and data symbols.

3(Original). The receiver of claim 1, wherein:

the subcarrier-to-symbol converter includes a Fourier transformer for Fourier transforming a representation of said serial signal sequence to said received pilot and data symbols.

4 – 5. Canceled.

6(Previously Presented). The receiver of claim 1, wherein:

the frequency offset estimator includes a peak phase detector for determining phases of peaks, respectively, of said correlation function; a block differencer for determining a phase difference between two said phases; and a discriminator for providing said frequency synchronization adjustment based upon said phase difference.

7(Previously Presented). The receiver of claim 1, wherein:

the frequency offset estimator includes a frequency adjustment sweeper for varying said frequency synchronization adjustment; and a synch peak detector for monitoring said correlation function and fixing said frequency synchronization adjustment when a peak of said correlation function exceeds a threshold.

8(Previously Presented). The receiver of claim 1, wherein:

the subcarrier-to-symbol converter includes a time synchronization serial-to-parallel converter for time synchronizing said serial signal sequence into received multicarrier blocks according to times of peaks of said correlation function; and a Fourier transformer for Fourier transforming said received multicarrier blocks into said received pilot and data symbols.

9(Previously Presented). The receiver of claim 1, further comprising:

a discrete noise reduction filter for receiving a raw said correlation function at discrete sample indexes and issuing a filtered said correlation function having filtered peaks at said discrete sample indexes for raw peaks of said raw correlation

function greater than a threshold and having a zero level at said discrete sample indexes for said raw peaks of said raw correlation function less than a threshold.

10(Original). The receiver of claim 9, further comprising:

an interpolator for interpolating said filtered correlation function for providing a channel impulse response;

a Fourier transformer for transforming said channel impulse response for forming channel estimates; and

an equalizer for using said channel estimates for equalizing said received pilot and data symbols.

11(Previously Presented). A method for receiving a serial signal sequence of modulated subcarriers carrying information for input pilot and data symbols, comprising:

converting said serial signal sequence into received pilot and data symbols representative of said input pilot and data symbols;

selecting said received pilot symbols from said received pilot and data symbols;

inverse Fourier transforming said received pilot symbols into received pilot multicarrier blocks.

generating a computed pilot multicarrier block having complex conjugates of system pilot symbols corresponding to said input pilot symbols;

correlating said received pilot multicarrier blocks with said computed pilot multicarrier block for providing a correlation function.

converting said correlation function to a frequency synchronization adjustment;

providing a reference signal having a frequency responsive to said frequency synchronization adjustment;

using said reference signal for frequency synchronizing to said serial signal sequence and providing a frequency synchronized serial signal sequence; and

using said frequency synchronized serial signal sequence for providing said received pilot and data symbols.

12(Original). The method of claim 11, further comprising:

inverse Fourier transforming said input pilot and data symbols for forming said modulated subcarriers as an orthogonal frequency division multiplex (OFDM) signal.

13(Original). The method of claim 11, wherein:

converting said serial signal sequence into received pilot and data symbols includes Fourier transforming a representation of said serial signal sequence to said received pilot and data symbols.

14 – 15. Canceled.

16(Previously Presented). The method of claim 11, wherein:

converting said correlation function to said frequency synchronization adjustment comprises:

detecting phases of peaks, respectively, of said correlation function;

determining a phase difference between two said phases; and

providing said frequency synchronization adjustment based upon said phase difference.

17(Previously Presented). The method of claim 11, wherein:

converting said correlation function to said frequency synchronization adjustment comprises:

varying said frequency synchronization adjustment;

monitoring said correlation function; and

fixing said frequency synchronization adjustment when a peak of said correlation function exceeds a threshold.

18(Previously Presented). The method of claim 11, further comprising:

time synchronizing said serial signal sequence into received multicarrier blocks according to times of peaks of said correlation function; and

Fourier transforming said received multicarrier blocks into said received pilot and data symbols.

19(Previously Presented). The method of claim 11, further comprising:

receiving a raw said correlation function at discrete sample indexes; and

issuing a filtered said correlation function having filtered peaks at said discrete sample indexes for raw peaks of said raw correlation function greater than a threshold and having a zero level at said discrete sample indexes for said raw peaks of said raw correlation function less than a threshold.

20(Original). The method of claim 19, further comprising:

interpolating said filtered correlation function for providing a channel impulse response;

Fourier transforming said channel impulse response for forming channel estimates; and

equalizing said received pilot and data symbols based upon said channel estimates.

21 – 44. Canceled.

45 (Previously Presented). A method of processing a received multicarrier signal, the multicarrier signal comprising a plurality of subcarriers carrying pilot and data symbols, the method comprising:

converting pilot symbols into received pilot multicarrier blocks;

generating a computed pilot multicarrier block having complex conjugates of system pilot symbols corresponding to received pilot symbols;

correlating the received pilot multicarrier blocks with the computed pilot multicarrier block to provide a correlation function;

estimating a frequency offset using the correlation function to provide a frequency synchronization adjustment;

generating a reference signal having a frequency responsive to the frequency synchronization adjustment; and

synchronizing the received multicarrier signal using the reference signal to provide a synchronized received multicarrier signal.

46(Previously Presented). A method according to claim 45, wherein providing the frequency synchronization adjustment comprises:

detecting phases of peaks, respectively, of the correlation function;

determining a phase difference between two said phases; and

providing said frequency synchronization adjustment based upon said phase difference.

47(Previously Presented). A method according to claim 45, wherein providing the frequency synchronization adjustment comprises:

varying said frequency synchronization adjustment;

monitoring said correlation function; and

fixing said frequency synchronization adjustment when a peak of said correlation function exceeds a threshold.

48(Previously Presented). A method according to claim 45, further comprising:

synchronizing the received multicarrier signal to provide a synchronized received multicarrier signal according to times of peaks of said correlation function.

49(Previously Presented). A method according to claim 45, further comprising:

receiving a raw said correlation function at discrete sample indexes; and

issuing a filtered said correlation function having filtered peaks at said discrete sample indexes for raw peaks of said raw correlation function greater than a threshold and having a zero level at said discrete sample indexes for said raw peaks of said raw correlation function less than a threshold.

50(Previously Presented). A method according to claim 49, further comprising:
interpolating said filtered correlation function for providing a channel impulse response;
forming channel estimates from said channel impulse response; and
equalizing said pilot and data symbols based upon said channel estimates.